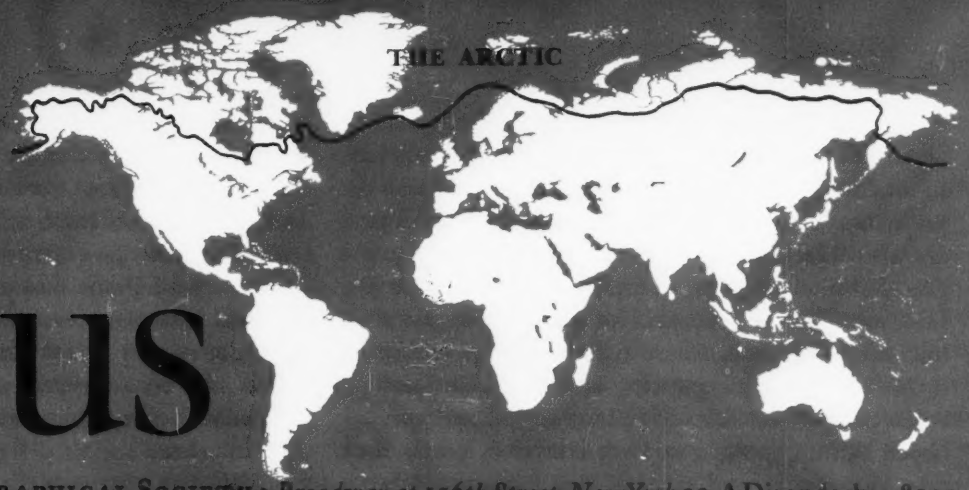


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by the AMERICAN GEOGRAPHICAL SOCIETY • *Broadway at 156th Street, New York 32, ADirondack 4-8100*

ALICE TAYLOR, EDITOR

VOL. II, NO. 6, February 15, 1952

# Resources of the Arctic

Until very recent times, the Arctic to most people was the land of the great unknown into whose northern mists only the most hardy, or foolhardy, dared to venture. Though a great deal of its mystery has now disappeared and travel to it is often no more than a matter of careful planning, detailed information on much of the region and its resources is still lacking or is speculative and controversial.

For many years there was not even agreement as to what constituted the Arctic, but gradually the term has come to mean the part of the world lying north of the *tree line*—that is, north of the great coniferous-forest belt. This line—actually a zone within which the trees gradually become smaller and more scattered until they disappear altogether—coincides fairly closely with the 50° isotherm for the warmest month. The southern limit of the Arctic as thus defined may lie north of the Arctic Circle, as in many parts of the Soviet Union, or south of the Circle, as in parts of Canada and Greenland (Fig. 1). All in all, the Arctic covers about 6 per cent of the world's land surface, and is no respecter of international boundaries; 40 per cent of it belongs to the Soviet Union, 28 per cent to Canada, 26 per cent to Denmark, 5 per cent to the United States, and about 1 per cent to Norway and Iceland.

The basic cause of our long-standing ignorance of the Arctic has been its inaccessibility. To get to it from most middle-latitude centers required a long and hazardous journey over stormy and ice-ridden seas or through trackless forest and muskeg, and there was always the fear that, having got there, it might be impossible to get back before the onset of winter. Needless to say, there were plenty of explorers who faced the hazards—and returned to tell the tale. But the tales did not always jibe, and, anyway, there were not enough of them to make a coherent story. That is, not until the coming of aircraft.

Today the situation is very different. With aircraft man has been able to span the lands and seas that he was unable to penetrate on foot, by dog team, or by boat (Fig. 2). In the last 10 years more firsthand information has been obtained on the Arctic than in the preceding century. And more is coming in every year. We now know, for instance, that there are many different Arctics, and that hardly any statement applies to them all. There are permanently ice and snow-covered areas, such as the northeastern part of the Canadian Arctic, Svalbard, and Iceland, and the vast Greenland Ice Cap. There are areas where most of the snow disappears in the short summers and the *tundra* vegetation becomes visible, with its characteristic abundance of flowering plants. Some areas are rolling grasslands, others are moss- and lichen-covered, still

others are bare rock outcrops. In some parts the ground will thaw out to a depth of three to four feet, in others to only three to four inches. Beneath lies the permanently frozen earth called *permafrost*. There are also wide variations from place to place in the precipitation, but characteristically it is on the low side: most of Arctic Siberia for instance has less than ten inches per year. There are even wider variations in the length of the growing season: at Chesterfield Inlet, on the west side of Hudson Bay, it averages between 65 and 70 days; at Port Harrison, on the east side, between 40 and 45 days. But fluctuations from year to year are considerable.

The soils, for the most part, are shallow, acid, and poorly drained; over large areas they are entirely missing. Clearly, the Arctic is no place for the usual kinds of farming. Here and there attempts have been made to raise such crops as cabbage and potatoes; at Umanak in Greenland, which claims to have the most northerly garden in the world, broccoli and radishes grow well, and turnips and lettuce sometimes succeed. As in some other aspects of Arctic economy, the Russians have hitherto led the way in agricultural experimentation. On one farm, located within 900 miles of the North Pole, they have succeeded in raising hardy grains, arctic raspberry, and flax. According to a report by Fairfield Osborn, growth during the short vegetative season is so rapid that it "must actually be controlled by spreading tarpaulins over the hot-bed frames in order to simulate artificial night"! In some of the southern, warmest borders of the Arctic domestic animals are raised, particularly sheep, which in the Julianehaab area of southwest Greenland number about 20,000 and in Iceland more than 530,000.

Because of the widespread occurrence of nutritious grasses and mosses on the tundra, there is good reason to believe that the economic significance of reindeer herding will increase. Unlike sheep, the reindeer does not require shelter from weather, and even in the depth of winter it can fend for itself. Reindeer farming in many parts of the Soviet Union is already a major activity. Besides the traditional uses, parts of the carcass are made into such diverse products as suède, mattresses, furniture, felt, glue and gelatin, and it is said that tens of thousands of reindeer are also used as draft animals transporting goods from one place to another. On the North American continent reindeer herding so far has not been commercially successful. There are some small herds in northwestern Alaska and near the Mackenzie delta, where the animals are maintained to provide an auxiliary source of meat for the local inhabitants.

The backbone of the economy of the North American Arctic continues to be the fur trade—as it has been for the past 400 years. Notwithstanding the fickleness of Dame Fashion, the white fox is still the biggest money earner, though for this the trapper has more reason to thank the furrier (who can dye the pelts out of all recognition) than the fox! Other animals also in demand are ermine, red and cross fox, and muskrat.

Although currently the Russians do not appear to be putting much emphasis on the Arctic fur industry, it is by no means neglected: several large breeding farms have been established on islands off the Siberian coast to supplement the wild fur "crop."

The Arctic has long been known for its wealth of fish and marine mammals; indeed, it was probably the search for cod that took the first explorers into northern waters. Nothwithstanding the fact that these waters have been fished for centuries, they still yield not only cod, halibut, and herring, but also whale and seal. In some areas the whales and seals are hunted commercially (the catch usually being regulated to avoid depletion); elsewhere they are reserved for the native peoples. Commercial fishing is a basic activity off Greenland, Iceland, northern Norway and northern Russia, where many of the people are full-time fishermen and support fish canning industries. Especially flourishing at the present time is the cod fishing off the southwest coast of Greenland: in 1913 the cod catch off this coast was only 500 tons; by 1948 it was 16,000 tons! This striking increase is in large measure due to the warming up that this area has experienced during the past 40 to 50 years. Today the cod habituates the waters of west Greenland as far north as 73°N; at the beginning of the century it was seldom found north of 64°N. There have been comparable migrations of herring, halibut, and haddock in the more open waters of the North Atlantic.

Important as these organic resources are to the economy of the Arctic, the focus of national, and international, interest is rapidly shifting to the inorganic resources—the minerals. Of course, some minerals have been mined commercially in the region for a comparatively long time. Coal has been mined in Svalbard since 1905 and the cryolite mines near Ivigtut in Greenland, the only ones in the world, have been in operation since 1856. Coal of low quality is also obtained in Greenland for local use. For some

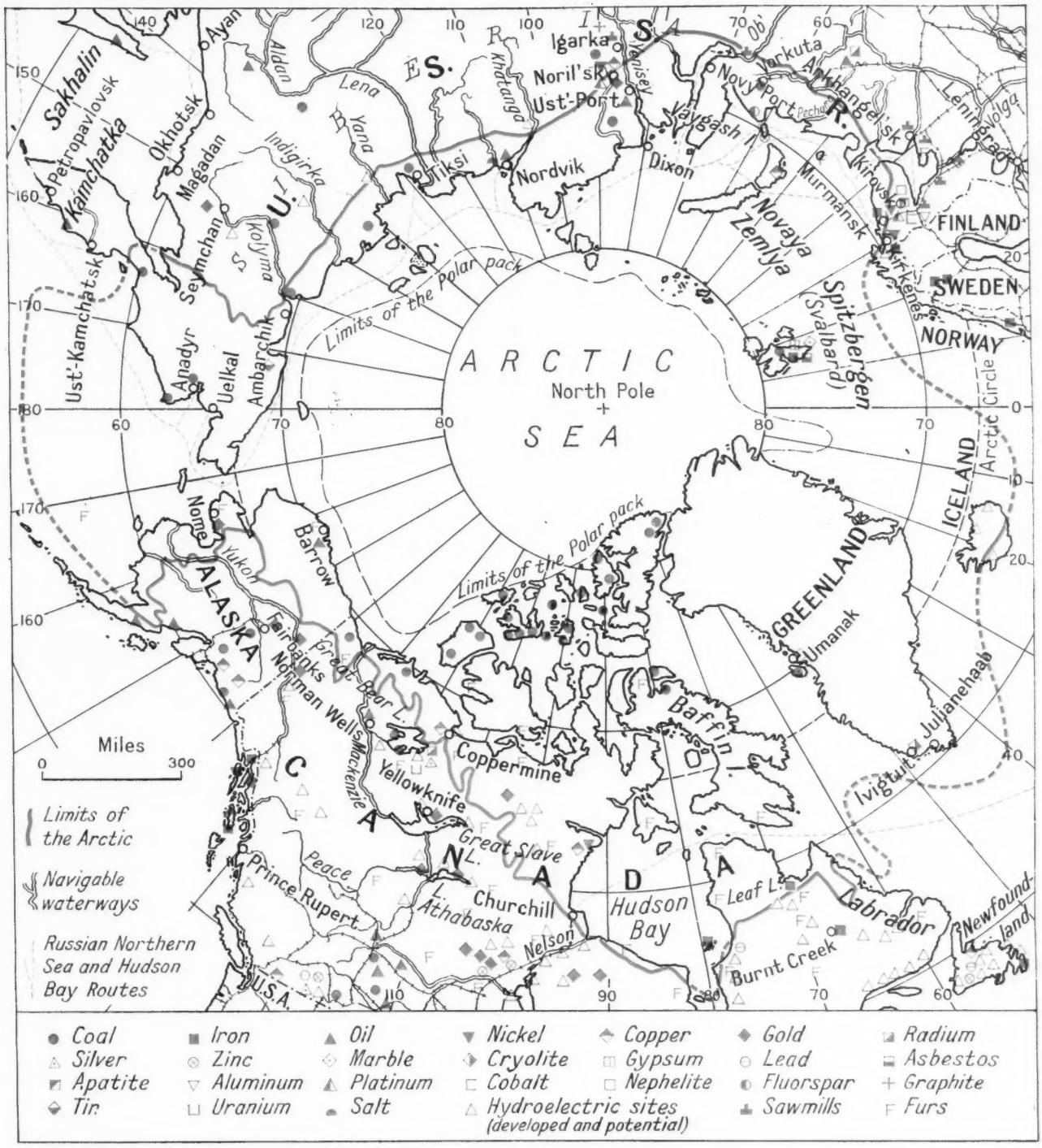



Fig. 1 — Main resources of the Arctic

years past, the Norwegians have been exploiting their high-quality iron ores in the Kirkenes district. This borders on the Soviet mining center of Kirovsk, near the world's largest apatite and nephelite deposits and significant deposits of nickel, copper, and rare metals.

As Fig. 1 shows, a wide variety of other minerals are now known to exist along the Arctic shores of the Soviet Union. By 1935, 1,500 such deposits had been located, two to three hundred of which had been proved. Since then, some have become of outstanding

value in the Russian economy. In 1947 the coal output of the Pechora Valley alone was 7,000,000 tons; the reserves are estimated to be as great as, or greater than, those of the Donbas, at present Russia's largest producer. West of the Pechora coal field oil is obtained. Small flows of oil have also been found near Norilsk. Other minerals that are being exploited on an increasingly large scale are fluorspar, salt, copper, nickel, platinum, gold, tin, and radium.

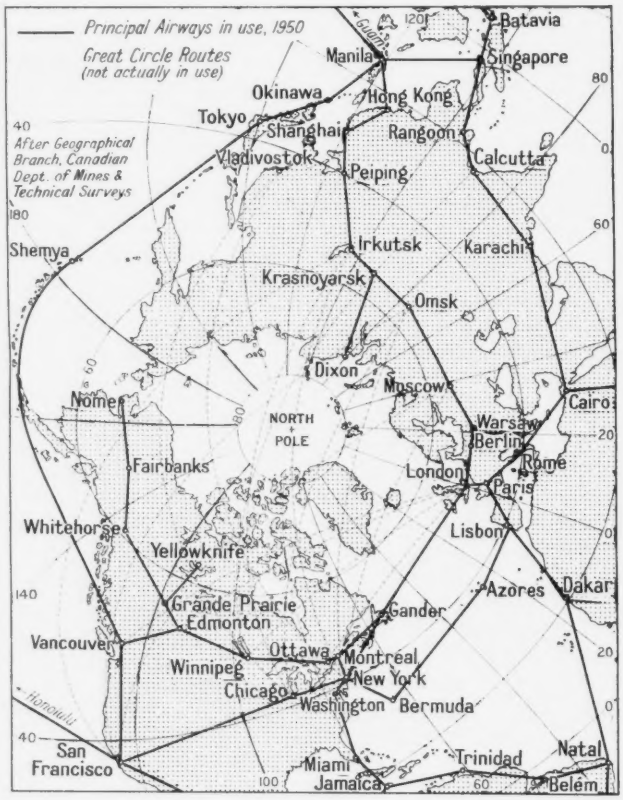
On the North American continent, there are as yet few commercial mines operating within the zone we have designated as "Arctic." But that there will be such mines, and in the near future, none can doubt. Coal of various qualities is widespread throughout the islands. Explorers have used it frequently as a fuel, and in Arctic Alaska and at several settlements in Arctic Canada it is dug today for local use. Substantial deposits of iron and nickel have recently been proved near Hudson Bay. Oil seepages occur at several places in Arctic Canada, and the United States Navy has an oil lease on a large area of the northern coastal plain of Alaska. Some placer gold has been recovered from Arctic Alaska, and also silver, antimony, tungsten, jade, and asbestos. If the radium and uranium deposits at Great Bear Lake, the oil at Norman Wells, the gold at Yellowknife, and the iron ore at Burnt Creek and Leaf Lake are any criteria of the mineral potential of the northern Shield, then it is almost certain that other large, highly strategic, deposits will one day be found north of the tree line.

Even if the coal and oil resources of the Arctic should prove to be inadequate for the needs of its burgeoning towns and industries, there will be no shortage of hydroelectric power, available either from the northern Subarctic* or from the Arctic itself. In the U.S.S.R. power developments already take care of numerous sawmills and mines in the northwest. So far no similar developments have occurred in the Canadian or Alaskan Arctic, though here too great potentialities exist.

In spite of the revolution wrought by the Air Age, the fundamental problem of northern development is still how to move people and goods cheaply. Aircraft are, of course, used increasingly, even for transporting bulky parts, but freight charges and passenger fares are high, and likely to deter all but the government department or the wealthy prospecting company. Water transport is possible during the short summer, and barge traffic up and down the northward-flowing waterways is well developed, particularly in the Soviet Union. In northern Canada, except for the Mackenzie, unfortunately there are few serviceable rivers: rapids, low water, and shifting sandbanks constitute a formidable trinity of hindrances to navigation.

Sea transportation is likewise attended by difficulties, especially in the North American sector. In addition to the permanent pack ice which, though constantly moving and breaking up, prevents trans-Arctic navigation, the Canadian mainland is fringed by so many islands that the straits between them easily become blocked by ice. The Soviet Arctic appears to have fewer difficulties of this nature than the North American Arctic, and the Northern Sea Route from Murmansk to Vladivostok is now an established enterprise, albeit with the assistance of icebreakers and complex navigational aids. The route as a whole is open for about two months and a half in a good year, which is just about long enough to enable a freighter

Fig. 2 — The Arctic in world airways




* The Subarctic may be defined as the region where the mean temperature is higher than 50°F for less than four months of the year and the mean temperature of the coldest month is less than 32°F.

to make the through trip. Its significance in the development of the Soviet Arctic can hardly be exaggerated. East-west transportation is well-nigh impossible over the great river-cut lands of northern Siberia, which are still most inadequately served by road and rail; this means that the products of the Subarctic, such as timber, furs, and minerals, as well as those of the Arctic itself, must normally find a northern outlet, and move downstream, by river boat, to the Arctic Sea where they are transshipped. Much of the timber of the Russian Far North, for example, is exported via the port of Igarka on the lower Yenisey. In other northern lands it is more customary for the products of the Arctic and Subarctic to move southward, though a notable exception is provided by the Hudson Bay shipping route: at the present time several million bushels of wheat are annually exported from the Canadian prairies via Churchill and the Hudson Bay Route, which is open for about as long as the Russian Northern Sea Route.

What of the human resources of the Arctic? As can readily be imagined, the traditional hunting-fishing economy of the Eskimos, Samoyeds, and others, does not support large numbers of people; indeed, the Arctic has always been one of the most sparsely peopled regions in the world. In the whole of Greenland there are only 22,000 inhabitants, and only 9,000 in the entire Mackenzie District of northern Canada. Contact with the people of middle latitudes has caused some of the northern inhabitants to succumb to new diseases, so that their very survival, in some districts, is in doubt. Elsewhere they are holding their own, and showing a remarkable ability to absorb the white man's culture and the entire gamut of his technical aids: Eskimos, especially, have developed a great facility for handling motorboats and even aircraft.

Like every other "underdeveloped" part of the world, the Arctic is destined to play an increasingly potent role in the affairs of men and of nations. Indeed, it is already a vital part of the world community, and particularly the NATO community. The main land masses of the world, nine-tenths of its population, and most of its economic potential are located within 90° of the North Pole, and the shortest air routes between the three great powers straddle the Arctic.

The strategic and military significance of these facts speaks for itself. Civilization may no longer be northward bound, as some students of history have opined, but if Horace Greeley were alive today, he would probably say, "Go North, young man!"

(Based on a manuscript by Norman L. Nicholson).

### *Brief Bibliography*


An Introduction to the Geography of the Canadian Arctic. Ottawa, Dept. of Mines and Technical Surveys, Geographical Branch, 1951.

Lloyd, T. Progress in West Greenland. The Journal of Geography, Vol. XLIX, No. 8, Nov. 1950, pp. 319–329.

Mid Century Alaska. Washington, Dept. of the Interior, Office of the Territories, 1951.

Nordenskjold, O. and L. Mecking. The Geography of the Polar Regions. New York, American Geographical Society, 1928.

Robinson, J. L. Resources of the [Canadian] Arctic. The Beaver, Outfit 280, December 1949, pp. 48–51.

Webster, C. J. The Growth of the Soviet Arctic and Subarctic. Arctic, Vol. 4, No. 1, May 1951, pp. 27–45.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